

**Overview of Regulatory Changes with Rationale:
Public Swimming Pools Regulation and Pool Standards 2014**

The *Public Swimming Pools Regulation* (Regulation) AR 204/2014 repeals and replaces the current *Swimming Pool, Wading Pool and Water Spray Regulation*. The Regulation is intended to set outcomes and standards for the operation of pools including swimming pools, wading pools, whirlpools, and water spray parks so as to protect users of pools from infectious diseases which may be spread through the water. The Regulation is also intended to improve safety and reduce the risk of injury and drowning. The Regulation continues to require approval of new operations, a permit to track facilities, adequate disinfection and filtration of water, monitoring of water chemistry, bacteriological water quality, protection against entrapment and safety and supervision of patrons.

The *Pool Standards July 2014* (Standards), referenced in the Regulation, sets specific technical standards pertaining to water quality and facility operation and replaces the *Pool Standards 2006*.

The following table provides a comparison of the previous and new requirements of significance and is for information purposes only. General editing has not been mentioned. Reference must be made to the Alberta *Public Swimming Pools Regulation* AR 204/2014 and the Alberta *Pool Standards July 2014* for official wording and requirements.

Public Swimming Pools Regulation A.R. 204/2014			
Row#	Previous Section	New Section	Rationale
1	All	Revised the regulation to re-arrange and improve clarity.	The regulation did not flow in a logical manner.
2	Definitions: 1(b) "mV" means millivolt;	Deleted	This term is not used in the proposed regulation. This technical requirement will now be dealt with in the Pool Standards.
3	1 (c) "ORP" means Oxidation Reduction Potential;	Deleted	This term is not used in the proposed regulation. This technical requirement will now be dealt with in the Pool Standards.

4	New	Introduced a definition for natural pool (Section 1 (c))	This is a new type of pool which had not previously been contemplated in the old regulation. A definition is required to clarify that the Regulation will not apply to these types of pools. City of Edmonton is planning to construct a natural pool which has a pool basin but relies on physical filtration and filtration through a small wetland rather than chemical disinfection.
5	1 (d) "pool" means a swimming pool, wading pool, water spray park and whirlpool;	<ul style="list-style-type: none"> • Revised the definition to include the pool premises. (Section 1 (g)); • Introduced a second term for all types of pools called "public swimming pool". (Section 1 (j)); • Added a definition of pool premises to define other areas of the facility. (Section 1 (k)) 	<p>This provides one term to cover all types of pools and the pool premises and retains a term to describe all types of swimming pools Section 66(2) of the <i>Public Health Act</i> states that the Minister may make regulations (j) respecting the construction, inspection, operation, maintenance, equipping, cleansing, disinfection and disinfestation of public swimming pools;</p> <p>Therefore, the terminology in the regulation needed to align with term 'public swimming pools'.</p> <p>A new term is needed to define other areas of the premises.</p>
6	1(e) "Pool Standards" means the Pool Standards, 2006 declared in force under section 2;	Revised to reference the proposed <i>Pool Standards July 2014</i>	The revised version of the Pool Standards should be referenced to provide transparency and clarity.
7	1(f) "responsible person" means a person determined under section 3 as a responsible person;	<p>Revised and replaced the term 'responsible person' with two terms: owner and owner's agent. (Section 1(d) and (e))</p> <p>The term 'responsible person' referred to the owner or the owner's designate. This term has been replaced with 'owner' and 'owner's agent' throughout the</p>	<p>Justice recommended a change in terminology which uses plainer language.</p> <p>The delegation of authority remains the same. (Section 5) This continues to allow an owner to designate a person or 'agent' to act on their behalf. Owners living out of province need a local agent or operator to oversee the operation.</p>

		entire regulation.	
8	New	A definition for 'patron' was introduced. (Section 1((f))	This is not a new concept and does not change the requirements but the term better describes the range of individuals entering and using all aspects of the facility.
9	New	Introduced a definition for 'pool operator'. (Section 1 (h)) This new term is used throughout the Regulation.	The term has been added to clarify the fact that a qualified operator must oversee day-to-day operations. The operator may or may not be the owner or the owner's agent.
10	New	Introduced a definition for 'suction outlet'. The term 'drain' is replaced in the regulation with 'suction outlet'.	'Suction outlet' more accurately refers to the components of a drain cover and sump which must be assessed to reduce the risk of entrapment.
11	1(g) "swimming pool" means a structure containing a pool of water that (i) is greater than 60 centimetres at its greatest depth, and (ii) is used for recreation, healing, therapy or other similar purpose and means all buildings and equipment used in connection with the structure but does not include (iii) a swimming pool that is constructed for the use of a single family dwelling unit and used only by the owners and their guests, unless the structure is operated as a business, or (iv) a swimming pool that is drained, cleaned and filled after each use by each individual;	Revised the definition to only relate to clause (i). Clause (ii) which is related to uses, is moved to the definition of a public swimming pool. Clauses (iii) and (iv), the exceptions where the regulation does not apply, has been moved to Section 3. Added a new exception for 'natural pools', a new type of pool treated throughout a wetland type system with water quality similar to a beach.	This reduces the redundancy across the definitions. and places exceptions in a clear stand-alone section. Exceptions are placed in a stand-alone section to highlight and clarify where the regulation does not apply. Exception is also granted for natural pools, a new type of pool which would not be able to meet many of the provisions of this regulation. The safe operation of this type of pool will be addressed under the provincial recreational water quality criteria.
12	1(j) "whirlpool" means a structure containing a pool of water that is designed primarily for therapeutic	Revised the definition to include a water temperature of 30°C, the operating temperature for	In practice, whirlpools are defined by the operating temperature and the hydrojets but the temperature was missed in the previous definition.

	<p>or recreational use and that</p> <ul style="list-style-type: none"> (i) is not drained, cleaned and refilled before use by each individual, and (ii) utilizes hydrojet circulation, air induction bubbles, or hot water or any combination of them 	whirlpools.	
13	Section 4 (3) An application for a permit must be in writing and must include the following:	Revised the requirements for permit application so that the application includes the name of the owner, the name of the owner's agent and the name of the pool operator.	This will ensure that the application includes the appropriate names to contact regarding the permit and later, the operation of the pool. This is helpful when the owner is located in another country or province.
14	4(9) On the coming into force of this Regulation, a licence in good standing under the <i>Swimming Pool Regulation</i> (AR 247/85) is deemed to be a permit issued under this Section.	Revised the reference from 'licence' to permit issued under the <i>Swimming Pool, Wading Pool and Water Spray Park Regulation</i> . (Section 7(10))	<p>Licenses are considered equivalent to a permit issued under the 2006 regulation.</p> <p>This change carries the existing approved permits forward into the new regulation.</p>
15	7(2) The responsible person must ensure that the pool is operated and maintained by: (a) a person who meets the qualifications set out in the Pool Standards for a person who operates and maintains a pool	<p>Revised the section to refer to a 'pool operator' instead of a "person who meets the qualifications". Section 4(3)</p> <p>Moved the requirement for qualifications into the definition of 'Pool operator' (Section 1(h))</p>	This makes the provision more concise and places the qualifications requirement clearly as part of the definition of pool operator.
16	New	Added a section which allows an executive officer to require a pool operator to obtain additional training as needed. (Section 6 (a))	This section was moved from the Pool Standards 2006 to the Regulation. Operators who are not competent or unfamiliar with new treatment technology may be required to take additional training.
17	New	Added a section which allows the	This provision is needed as there are areas of the province

		owner to employ an untrained pool operator provided that training is undertaken within 90 days. (Section 6(a))	where it is difficult to find trained operators and it may take time to find and complete an approved course.
18	7(2) The responsible person must ensure the pool is operated and maintained by (b) if approved by an executive officer, a person who has access to a person described in clause (a) and who is available to assist with the operation of the pool.	Modified the section to allow the owner to contract with a third party pool operator who may oversee several operations. (Section 6 (c))	This allows more flexibility for owners to hire a private contractor to oversee several pools. This works well for hotel chains.
19	10(5) If, on coming into force of the Regulation, a pool does not have a mechanical feeder, the owner must install it no later than March 1, 2007.	Deleted	This section is no longer required since the implementation date has passed.
20	11(1) The free chlorine residual level in a pool must be sufficient to maintain the pool water in a bacteriologically safe condition but that level shall not be less than (2) Despite subsection (1), a pool that has an ORP value of 700mV or more may be operated with a residual of 0.5 milligram or more of free chlorine per litre. (3) The pH of the water in a pool must be maintained at not less than 6.8 and not more than 7.6.	Deleted the references to specific values for free chlorine, pH and alkalinity and revise to a general outcome statement. (Section 14)	The specific technical standards are better housed in the Pool Standards, which may be revised more quickly than a regulation. Pool equipment and treatment is continually evolving and the policy changes to address the changes need to be implemented in a timely manner.
21	New	Added Sections 14(2), (3), (4) to provide general outcomes related to requirements for non-chlorination oxidation products, cyanuric acids levels currently existing in the Pool Standards.	This addresses a gap in the Regulation where the technical requirements in the Pool Standards were not clearly linked to the Regulation. Cross referencing the Pool Standards will ensure consistency.

22	13(1) A water spray park that uses non-recirculating water does not have to meet the requirements of sections 9, 10, 11 and 12 but the water used in the water spray park must be from a potable source.	Editorial corrections: added reference to appropriate sections which are not applicable to non-recirculating water spray parks. (Section 16)	Section 13 was no longer accurate due to the changes in numbering and the layout of the regulation.
23	13(2) If a wading pool was constructed and in operation before the coming into force of this Regulation and uses non-recirculating water, the wading pool does not have to comply with sections 9,10,11 and 12 if the water in the wading pool comes from a potable source.	Deleted this section	This exemption continues to be captured under Section 16 and is no longer needed.
24	16 The quality of the water in a pool must be maintained so that samples of the water (a) do not have a heterotrophic plate count of more than 100 bacteria per millilitre, (b) do not show the presence of <i>Pseudomonas aeruginosa</i> , and (c) do not show the presence of coliforms in a 100 millilitre sample.	Deleted references to specific bacteriological standards and move to the Pool Standards July 2014. Reworded to a general outcome statement of being in accordance with the Pool Standards (Section 18).	Specific technical standards are better housed in the Pool Standards, as Standards may be revised more quickly than a regulation. Pool equipment and treatment knowledge is continually evolving and these changes need to be implemented in a timely manner. The requirement is not being changed.
25	17 Water clarity New	Added a new subsection (Section 20 (3)) on water clarity will cross reference the existing requirement to monitor turbidity as needed in the Pool Standards	This addresses a gap in the Regulation to allow for monitoring of turbidity when water clarity issues persist in a pool.
26	New	Added Section 21(1) to ensure that the maximum bather load is not exceeded and to provide an option to calculate bather load where the engineer's calculation from the original plan is not	Management of bather load is key to maintaining water quality. Bathers contribute organic pollutants and microbes to the water and the capacity of a treatment system is based on the loading from the bathers.

		available.	
27	20(2) The policies referred to in Subsection (1)(a) and (b) must be accessible to the staff at the pool and to an executive officer.	Revised provision to require policies and plans to be reviewed with staff. (Section 24(2))	It is important that policies are not only accessible to staff but that staff are very familiar with policies regarding the use of the pool. This amendment is designed to protect bathers.
28	23(1) An owner of a rental mobile hot tub must prepare an operating manual outlining proper disinfection, operation and maintenance information regarding the hot tub. (2) An owner of a rental mobile hot tub must provide a copy of the operating manual to each renter when entering the rental agreement.	Deleted	These two requirements fall outside the mandate of the <i>Public Health Act</i> . Hot tubs will continue to be regulated in locations where they are used by the public and their use will continue to be subject to the approval of the executive officer.
29	24(1) The <i>Nuisance and General Sanitation Regulation</i> is amended in section 1(c).	Deleted reference to a consequential amendment to the <i>Nuisance and General Sanitation Regulation</i> (Section 27)	The Nuisance and General Sanitation Regulation no longer has a reference to pools so this consequential amendment is no longer required.

<i>Pool Standards July 2014</i>				
Row #	Previous Section	New Section	Rationale	
1	I. Definition and Interpretation	<p>Adopted definitions from the Public Swimming Pools Regulation as described above</p> <p>Added the term 'bather' to identify those patrons that enter the pool.</p>	The term bather is only used in the Pool Standards to calculate bather loads.	
	General	▲	Beginning of each section is tied to the related Section of the regulation. Not every section of the regulation has further requirements in the Standards.	
2	<p>III. 1) Pool Operator Qualifications</p> <p>1. A person who operates or maintains a pool must be trained in pool operation, chemistry, pool filtration and maintenance.</p> <p>2. Alberta Health and Wellness may:</p> <p>a. Identify qualifications, including upgrading requirements that are required of a person who operates</p>	<p>▲ Pool Operator</p> <p>For the purposes of section 4 of the <i>Regulation</i>, the following pool operator training and certification qualifications apply.</p> <p>1.1 Certificate</p> <p>The pool operator must</p> <p>a) be certified by an organization that is on the List of Approved Pool Operator Education Organizations approved by the Minister, and</p> <p>b) upon request, provide proof of successful completion of the course in the form of a certificate issued by the approved organization.</p> <p>▲</p>	<p>Replaced this section with new certification and education requirements.</p> <p>A cross-sectorial group met and developed a pool operator education framework which</p>	<p>No recertification requirement at this stage.</p> <p>It is implicit in the regulation that the person is trained at the time of</p>

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<p>or maintains a pool (pool operator qualifications) b. develop core elements and objectives for pool operation courses that will provide training for people who want to acquire pool operator qualifications; c. review any existing pool operation courses that are submitted to the department to determine if the course provides for appropriate and cost effective training. 3. Stakeholders who may be consulted about pool operator qualifications and pool operation courses, include representatives of: a. Regional Health Authorities b. Alberta Association of Recreation Facility Personnel c. Alberta Hotel and Lodging Association d. Alberta Pool and Hot Tub Association e. Alberta Lifesaving Society f. other stakeholders as necessary.</p>	<p>1.2 Qualifications obtained prior to November 30, 2014 A pool operator is considered certified if, prior to November 30, 2014, the pool operator a) has successfully completed a pool operator course through the Alberta Association of Recreation Facility Personnel, the National Swimming Pool Foundation, or a regional health authority in Alberta; and b) is operating a pool or teaching a pool course.</p> <p>1.3 Additional Training An executive officer may require a pool operator to obtain additional training in water treatment, disinfection, facility operation and safety where required</p>	<p>was approved by the Deputy Minister. This now adopts the pool education requirements into regulation. The List of approved Organizations will be posted on the AH website. This section grandfathers those operators previously certified by AARFP, NSPF or AHS provided that the operator has been active in the field either through operation or teaching. The certification has no expiry.</p> <p>At this time there is no option to just sit the exam nor is there a mechanism for equivalency from another jurisdiction.</p>	<p>employment. Then the exceptions can be applied where appropriate.</p>
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			No requirement for re-certification at this time. Could be considered in the future. Additional training may be required where an operation has new technologies, for example, ozonation.	
3	III. Construction, Operation and Maintenance of Pools 2) Filtration and Recirculation	<p>▲ 3.1 Recirculation</p> <p>▲ 3.1.1 A recirculation rate shall be maintained so that an amount of water equivalent to 100 percent of the water volume passes through treatment and is recirculated within:</p> <ul style="list-style-type: none"> i. 4 hours, for a swimming pool constructed after November 2006, ii. 6 hours, for a swimming pool constructed before November 2006, iii. 8 hours, for a swimming pool constructed before November 2006, where it can be demonstrated that the water quality can be maintained in accordance with the Pool Standards. iv. 1.5 hours for a water slide receiving pool used solely for that purpose. v. 2 hours for a stand-alone wading pool or recirculating water spray park. vi. 15 minutes for a whirlpool with a volume of less than four cubic metres. vii. 20 minutes for a whirlpool with a volume of four or more cubic metres. <p>▲ 3.1.2 If a wading pool or recirculating water spray park is connected to a swimming pool, the turnover time for the swimming pool shall apply to the wading pool or water spray park.</p>	<p>This section has been reworded but the filtration/recirculation rates have not been changed.</p> <p>The rates of filtration have been converted to metric units.</p> <p>This section allows older pools operating successfully at 8 hour turnover to continue but no other pools can move to 8 hour turnover.</p>	<p>The maximum filtration rates for high rate sand filters were not changed. There was discussion that these should also apply to water spray parks but this was not considered during consultation.</p>

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			This section should be amended to address turnover in other types of pools such as jog/swim in place,	
4	III. 3. The accepted standard for effective recirculation is that eighty percent of the water must be circulated from the pool surface...	3.2 Collection of water from public swimming pool surface When a public swimming pool is in use, it must be operated to maximize the flow of the water through the skimming devices.	Pool water quality studies indicate that the concentration of pollutants is highest in the top 6-12 inches of the pool water. In principle, maximizing the collection of water from this area will lead to better water quality. However, there are no tools to measure the "80 %" recirculation required in the previous Standards and so this statement was amended to a more general requirement.	
5	III. 4. All filters must be backwashed and cleaned according to	Deleted	This was seen as operational and the responsibility of the	Section 3.3 The maximum rate of filtration has not

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	manufacturers instructions.		operator.	changed – there was no consultation on this so it was left as is. In future, may want to set manufacturer’s instructions for other types of filters
6	III. 6. Pools using cartridge filters must have a second set of filters available to allow for adequate cleaning.	Deleted	This was seen as operational and the responsibility of the operator.	
7	New	<p>3.4 Treatment for recirculating water spray parks</p> <p>Any stand-alone recirculating water spray park constructed after November 30, 2014 shall provide 100 per cent filtered water with 2.0 milligrams per litre free chlorine residual at the point of contact with the bather.</p>	The design of many water spray parks does not ensure that the water delivered at the point of contact has been adequately treated and disinfected. Any new water spray park, constructed after November 30, 2014 will now be required to ensure that the water is fully filtered and disinfected prior to bather contact.	

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<p>8</p>	<p>III. 3) Disinfection 1. There must be no cyanuric acid or stabilized products used in an indoor pool. 2. The concentration of cyanuric acid in an outdoor pool must be tested weekly. 3. To assist in maintaining proper pH, the alkalinity must be maintained at 80-120 ppm and measured weekly. A higher concentration may be allowed in instances where an executive officer has provided approval.</p>	<p>4.5 Total alkalinity ▲ 4.5.1 To assist in maintaining pH, the total alkalinity of the public swimming pool water must be maintained at no less than 80 and no greater than 180 milligrams per litre, unless an executive officer permits otherwise. ▲ 4.5.2 Total alkalinity must be measured and recorded at least once per week. 4.6 Cyanuric acid ▲ Where cyanuric acid is used in an outdoor public swimming pool, the concentration: a) must not be greater than 50 milligrams per litre, and b) must be measured and recorded at least once a week.</p>	<p>Section 3) was re-organized. The acceptable upper limit for alkalinity was raised from 120 ppm to 180 ppm. based on recommendations from the 2014 US Model Aquatic Health Code. The total alkalinity and cyanuric acid concentrations must now be recorded.</p>	
<p>9</p>	<p>4) Monitoring and Recordkeeping 1. Operating records must be maintained in a written form to provide information regarding: a. quantities and dates of all chemicals used b. time and results of pH tests c. time and result of all free chlorine residual tests d. time and results of all combined chlorine residual tests e. results of microbiological analyses f. temperature of the water, recorded at least once every 24 hours, and</p>	<p>5.1 Operating records Operating records must be maintained to provide information regarding: a) time of and observations and readings for pH, and the free, total and combined chlorine residual; b) time and results of total alkalinity tests; c) automated controller set points and readings for ORP, chlorine and pH; d) temperature of the public swimming pool water; e) clarity of the water; f) results of microbiological analyses as provided by the regional health authority; g) any other water quality tests; h) quantities and dates of all chemicals used; i) equipment maintenance; j) ambient air temperature in a sauna or steam room; k) make and model, purchase and expiry date of suction outlet covers, and</p>	<p>Section 4) was revised and moved to 5.0 Testing, Monitoring and Recordkeeping. Records must include information on all the parameters that are tested as well as key operational information.</p>	<p>c) terminology was broadened to 'automated controller' to allow for use of other types of systems such as amperometric probes. The regulation is also broad.</p>

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	g. any other tests.	manufacturers' recommended flow rate. l) incident records with respect to patron injury; and m) contamination events including the date of the event and the response.		
10.	New	<p>5.2 Manual tests</p> <p>5.2.1 The free chlorine, combined chlorine and pH must be tested manually at least once per day.</p> <p>5.2.2 The automated readings and associated setpoints shall be monitored and recorded at least once per day.</p> <p>5.2.3 Dip and read strips must not be used to measure chlorine, pH or alkalinity.</p> <p>5.3 Automated controller results Automated controller readings must be consistent with any manual tests.</p>	<p>This sets out the requirements to calibrate the automated readings with manual results.</p> <p>Dip and read strips are inaccurate and not allowed for testing chlorine, pH or alkalinity.</p> <p>The automated controller section is slightly reworded.</p>	<p>This was requested by AHS based on experience with these.</p>
11.	Moved from Regulation to Standards	<p>4.1 Free chlorine residual The minimum free chlorine residual in a public swimming pool must be maintained as follows:</p> <p>4.1.1 1.0 milligram per litre in a public swimming pool with an operating water temperature of not greater than 30 degrees Celsius.</p> <p>4.1.2 2.0 milligrams per litre in a public swimming pool with an operating water temperature of greater than 30 degrees Celsius.</p> <p>4.1.3 2.0 milligrams per litre in recirculating, stand-alone water spray park or stand-alone wading pool regardless of the operating water temperature.</p>	<p>Moved from Section 11(1) of the <i>Swimming Pool, Wading Pool and Water Spray Park Regulation</i> because it was considered a technical requirement.</p>	

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			No change in intent or requirement.	
12.	Moved from Regulation to Standards	<p>4.2 Oxidation reduction potential (ORP) Notwithstanding standard 4.1, a public swimming pool, except for a recirculating water spray park, may operate with a free chlorine residual of no less than:</p> <p>a) 0.5 milligrams per litre if able to consistently maintain an ORP value of no less than 700 millivolt (mV), and</p>	<p>Moved from Section 11(2) of the <i>Swimming Pool, Wading Pool and Water Spray Park Regulation</i> because it was considered a technical requirement.</p> <p>Added the phrase 'consistently maintain' in order to ensure that the ORP of 700 mV is constant.</p>	<p>This allowance for lower free chlorine cannot be applied to a recirculating water spray park – no parks are known to operate at these low levels due to high bather loads, low volume of water, surface area.</p>
13.	New	<p>4.2 b) 0.3 milligrams per litre if able to consistently maintain an ORP value of no less than 770 mV, a pH of no more than 7.3 and when supplemental disinfection is used.</p>	<p>With improving treatment technology, operators have requested an option to operate at a lower chlorine residual. This will be possible provided that pH and supplemental</p>	<p>Supplemental disinfection was added to ensure consistent ORP – there is concern that these low levels could fluctuate and reach closer to 0 ppm. This can be evaluated over the</p>

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			disinfection are in place to help ensure water quality.	next 2 years. Approval of any supplemental disinfection could include a requirement for monitoring so it is not specifically mentioned here. This is in line with the German DIN standard (except that the supplemental disinfection was added)
14.	New	4.3 Combined chlorine residual The combined chlorine residual in a public swimming pool must be maintained at the lowest level possible to maximize bather comfort.	There continues to be no consensus as to where to set the maximum combined chlorine concentrations. This statement provides some general guidance	Model Aquatic Health Code is advocating: There was some support for 'should not exceed 1.0 ppm'
15.	Moved from Regulation to Standards	4.4 pH range The pH of the water in a public swimming pool must be maintained at no less than 6.8 and no greater than 7.6.	Moved from Section 11(2) of the <i>Swimming Pool, Wading Pool and Water Spray Park Regulation</i> as this	

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			is considered a technical requirement. No change in requirement.	
		Cyanuric acid		The MAHC does not allow stabilizer in spas and high risk pools, requires doubling the minimum free chlorine in pools with stabilizer and doubling the Ct for formed stool (could consider this for next iteration)
16.	Moved from Regulation to Standards	<p>▲ 6.0 Microbiological Requirements For the purposes of section 18 of the <i>Regulation</i>, the following microbiological requirements apply.</p> <p>▲ 6.1 Heterotrophic plate count / Total coliforms The quality of water in a public swimming pool must be maintained so that the water does not:</p> <ul style="list-style-type: none"> a) have a heterotrophic plate count greater than 100 colony forming units per milliliter in a 100 millilitre sample, or b) show the presence of total coliforms in a 100 millilitre sample. <p>▲ 6.2 <i>Pseudomonas aeruginosa</i> In addition to 6.1, the quality of water in a public swimming pool operating at greater than 30 degrees Celsius must be maintained so that samples of the</p>	<p>Section 16 was moved from the <i>Swimming Pool Wading Pool and Water Spray Regulation</i> as it was considered a technical requirements.</p> <p>No change in intent.</p>	<p>It is likely that we would find Pseudo in all pools, regardless of temp if the chlorine residuals are not met. Aeration probably results in greater 'seeding' events where the biofilm is sheared or sloughed in jets or nozzles. Not</p>

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		water do not show the presence of <i>Pseudomonas aeruginosa</i> .	Weekly testing is in Section 19(1) of the Regulation. This specifies that the <i>Pseudomonas</i> standard applies to pools operating at greater than 30C.	likely that aeration itself would enhance growth. In the elevated temp pools, it may be more likely that 'potentially pathogenic strains may be more representative in the population but the key is the chlorine residual. (Norm N.)
17.	Moved from Regulation to Standards	<p>7.0 Microbiological Sampling For the purposes of section 19 of the <i>Regulation</i>, the following microbiological sampling requirements apply.</p> <p>7.1 Water sampling procedure</p> <p>7.1.1 A water sample for heterotrophic plate count and total coliforms must be taken weekly from a public swimming pool.</p> <p>7.1.2 A water sample for <i>Pseudomonas aeruginosa</i> must be taken weekly for public swimming pools operating at 30 degrees Celsius or greater.</p> <p>7.1.3 Samples required under Section 7.1.1 and 7.1.2 must be taken: a) from a point near an outlet or from any other location that is necessary to give an accurate representation of the water quality in the public swimming pool, and b) between 200 to 400 millimeters below the surface of the water.</p>	<p>Section 15 of the <i>Swimming Pool, Wading Pool and Water Spray Park Regulation</i> was moved from the regulation to the Standard due to its technical nature.</p> <p>This section clarifies the requirement for testing <i>Pseudomonas</i>.</p> <p>There is no change to this requirement.</p>	

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		<p>7.2 Collection of water samples Public swimming pool water samples for microbiological testing must be collected in sample bottles supplied by the Provincial Laboratory of Public Health.</p>	<p>Reference to 'bottles containing a dechlorinating agent' was removed. The Prov Lab will specify appropriate bottles that are to be used based on current lab procedures.</p>	
	<p>III Construction, Operation and Maintenance of Pools 5) Microbiological Sampling 3. The regional health authorities must forward the results of the sample to the responsible person for self-monitoring purposes.</p>	<p>Deleted</p>	<p>Legal has advised that it is not appropriate to set out requirements for AHS within the Standard. It is still important that the results be shared with the operators.</p>	
18.	<p>Water Quality 1. The responsible person shall ensure that the maximum design bather load is not exceeded during</p>	<p>8.0 Water Quality and Water Clarity For the purposes of sections 10 and 20 of the <i>Regulation</i>, the following public swimming pool water quality and clarity standards apply. 8.1 Bather load 8.1.1 When in use, the maximum design bather load of the public swimming</p>	<p>Requirement</p>	

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	<p>the operation of the pool. Where the maximum bathing load has not been established, the following shall be met:</p> <ul style="list-style-type: none"> ▲ a. 1 person per square meter in a whirlpool; and b. 1 person per 1.5 square meters in other swimming pools. <p>2. The responsible person may apply to the executive officer for an increase in bather load beyond the maximum design bather load specified in the design plans. The executive officer shall review the bather load as well as the overall swimming pool operation and if satisfied that pool water quality will be maintained, may allow the increase in bather load.</p> <p>▲ 3. Where clarity problems persist, the executive officer may require monitoring of the turbidity using a meter until the turbidity is no greater than 0.5 Nephelometric Turbidity Units (NTU).</p>	<p>pool must not be exceeded.</p> <p>▲ 8.1.2 Where the maximum design bather load for a public swimming pool is not available, the owner or owners' agent, if any, must calculate and apply a maximum bather load value in accordance with Schedule B.</p> <p>▲ 8.1.3 Notwithstanding 8.1.1 and 8.1.2, the public swimming pool may be operated to exceed the maximum design bather load or the calculated maximum bather load if chlorine, pH, clarity, ORP and bacteriological requirements are met.</p> <p>▲</p> <p>8.2 Clarity problems Where water clarity problems persist, the executive officer may require monitoring of the clarity using a nephelometer until the turbidity is no greater than 0.5 Nephelometric Turbidity Units (NTU).</p>	<p>remains the same with revised wording.</p> <p>Revised to remove reference to bather per square meter which is not related to water quality.</p> <p>It is not always possible to locate the original maximum bather load specifications for a pool. There is a new option to calculate the bather load based on the 2m3 treated water per bather per day. The calculation is included at the end of the Standards.</p> <p>No change in intent.</p>	
19.	None	<p>9.0 Anti-Entrapment Devices</p> <p>9.1 Anti-entrapment Plan Every owner or owner's agent, if any, must assess anti-entrapment risks, develop and implement an appropriate anti-entrapment plan to meet the</p>	The term 'devices' is a broad term which includes fittings.	The term 'suction outlet' includes a fitting, fitting assembly,

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		requirements of this section.	This is a new requirement for operators to plan how to assess and address the anti-entrapment risks by November 30, 2017.	cover/grate, sump and related components (APSP-16 2011)
20.	<p>7) Anti-entrapment As required in Section 19 of the Regulation, pools with submerged suction outlets must be equipped with one of the following anti-entrapment devices:</p> <p>a. A minimum of two outlets per pump with pipe centres at least 920 cm (3 feet) apart with covers listed, approved and installed in accordance with American Society of Mechanical Engineers (ASME) and American National Standards Institute (ANSI)/A112.19.8 performance requirements;</p> <p>b. Anti-entrapment covers, on all suction outlets other than the skimmer(s), listed, approved and installed in accordance with ASME A112.19.8M performance requirements and</p>	<p>9.3 Main submerged suction outlet</p> <p>9.3.1 On or after November 30, 2017, a submerged suction outlet, including a gravity fed outlet, in a public swimming pool, must have a cover that is:</p> <p>a) compliant with the ANSI/APSP-16 2011 performance standards, or</p> <p>b) custom fabricated and certified by a professional engineer, in accordance with ANSI/APSP-16 2011, and installed and maintained according to the engineer's instructions.</p> <p>9.3.2 Every suction outlet shall have a water velocity through the opening of the cover that is not greater than 0.5 meters/second (1.5 feet per second) as calculated in Schedule C.</p>	<p>'A gravity fed submerged drain' still creates suction and is a risk to bathers.</p> <p>This section has been revised to align with the provisions of the U.S. Virginia Graeme Baker and the Association of Pool and Spa Professionals. The intent is to protect against the 5 forms of entrapment including hair entanglement, limb, mechanical and body suction entrapment and evisceration. Owners will have 3</p>	<p>Requirement for 'Hydraulically balanced' was not included - difficult to confirm – need to develop guidance document (possibly use Washington State assessment)</p> <p>From Wade (email 1/14/2105 ANSI/ASME A112.19.8M -1987 (reaffirmed 1996)</p> <ul style="list-style-type: none"> Hair test was only a pony tail, no body block test, structural tests

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	<p>flow through the drain grate which does not exceed 1.5 feet per second;</p>	<p style="text-align: center; opacity: 0.5; font-size: 48px; transform: rotate(-30deg);">DRAFT</p>	<p>years to plan and implement. At a minimum, every suction outlet must have an approved cover.</p> <p>This was retained from the 2006 Standards.7) 1. b. and is expected to be referenced in the new Alberta Building Code of 2015.</p>	<p>focussed on body entrapment, UV stabilizers required but not tested</p> <p>ANSI/ASME A112.19.8 – 2007 (aka ASME A112.19.8-07)</p> <ul style="list-style-type: none"> • This was the standard in place with the original VGB act. Improved hair test, body block test, limb and finger entrapment, UV test, fasteners and fastening requirements , labelling and
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				<p>instructions.</p> <p>ANSI/ASME A112.19.8a -2008</p> <ul style="list-style-type: none">• UV light test was changed for fittings that were too large for standard UV test chambers. Portions could be removed for evaluation. <p>ANSI/ASME A112.19.8b -2009</p> <ul style="list-style-type: none">• Includes the 2007 and 2008 requirements .• Relaxation of test for self contained spa fittings. They were
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				<p>previously tested singly although UL 1563 requires the manufacturer s to install them in pairs on different planes. They could now be tested as a pair.</p> <p>ANSI/APSP -16 2011</p> <ul style="list-style-type: none">• Same as ANSI/ASME A112.19.8b-2009 and clarified some wording. <p>The 2006 pool standards 7(1)a specified A112.19.8 covers with dual drains or A112.19.8M</p>
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		<p style="text-align: center; font-size: 48px; opacity: 0.2; transform: rotate(-30deg);">DRAFT</p>		<p>covers in point (b) which was for the single drains. Those M covers are really outdated and pre-date VGB.</p> <p>Anything VGB will meet the major standard revision in 2007 so I propose we accept VGB or ASME A112.19.8 – 2007 or newer covers, no M covers if anyone has any stored. Agree – need to have compliance with ASME 122.19.8-2007 or APSP -16 2011</p>
21.	<p>b. Anti-entrapment covers, on all suction outlets other than the skimmer(s), listed, approved and installed in accordance with ASME A112.19.8M performance requirements and flow through the drain grate which does not exceed 1.5 feet</p>	<p>9.4 Single or interconnected submerged suction outlet</p> <p>On or after November 30, 2017, a public swimming pool that has a single submerged suction outlet other than an unblockable sump and cover (greater than 18 x 23 inches, 45.7 x 58.4 centimetres), or has interconnected submerged suction outlets which are less than 900 millimetres apart, centre to centre, must employ at least one of the following additional systems:</p> <p>a) multiple suction outlet system with at least two fully submerged suction outlets per pump at least 900 millimeters (3 feet) apart;</p>	<p>This sets a standard consistent with VGB Act which requires a secondary system or permanent disablement for a single main drain.</p>	<p>Unblockable drains ??</p>

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<p>22.</p>	<p>per second;</p> <p>c. A Safety Vacuum Release System (SVRS) that relieves suction when a blockage is detected and that is installed to meet the performance standards of the ASTM International F2387 and/or ASME/ANSI A112.19.17s;</p> <p>d. Drains which are at least 46 x 59 cm (18 by 23 inches) in size; (as based on torso size of 99th percentile male, weighing 244 pounds), or</p> <p>e. If approved by the executive officer, alternative anti-entrapment devices or solutions may be implemented which:</p> <ul style="list-style-type: none"> i. comply with Guidelines for Entrapment Hazards: Making Pools and Spas Safer. United States Consumer Product Safety Commission March 2005, or ii. are approved by a professional engineer. 	<p>b) a safety vacuum release system (commonly referred to as SVRS) that relieves suction when a blockage is detected and that is installed to meet the performance standards of the ASTM F2387 or ASME/ANSI A112.19.17-2010,</p> <p>c) a properly designed and tested suction-limiting vent system which meets ASME-A112.19.17-2010,</p> <p>d) an automatic pump shut-off system which meets ASME-A112.19.17-2010,</p> <p>e) permanent disablement of the submerged suction outlet either by reversing the flow through the outlet or completely sealing the existing outlet if the skimmers are capable of providing for 100 percent flow through, or</p> <p>f) an equivalent system approved by a professional engineer.</p>		
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	New	<p>9.5 Other submerged suction outlets Every equalizer line outlet or submerged suction outlet used for vacuuming must have a cover to reduce risk of entrapment and be used in a manner to protect patrons from entrapment or be permanently disabled.</p>	<p>New requirement. This requires the operator to assess other suction outlets such as vacuum connections and equalizer lines which are known to entrap bathers. There is an ASME standard for vacuum outlets but it is not mandatory – the operator may have alternative methods to keep bathers safe. Options would be discussed with local phi.</p>	<p>Recommend using ASME 122.19.8-2007 approved cover for equalizer lines.</p> <p>A vacuum suction fitting could be turned off but people make mistakes and so there needs to be another level of protection.</p>
23.	2. The responsible person must ensure that all anti-entrapment devices are properly installed and in good working order.	<p>▲ 9.6 Damaged submerged suction outlets</p> <p>▲ 9.6.1 The covers of each submerged suction outlet shall be routinely inspected prior to opening each day and throughout the day when the public swimming pool is in use. If upon visual inspection the cover of a submerged suction outlet is cracked, broken, improperly secured or missing, the pump shall be immediately shut down and the public swimming pool closed, until the cover is replaced.</p> <p>▲ 9.6.2 An anti-entrapment system installed in accordance with Section 9.4 must be routinely inspected in accordance with manufacturers’ instructions. A pool shall be closed if the anti-entrapment system is not operating in accordance with the manufacturer’s instructions.</p>	<p>The general requirement remains the same. The Standards now specify regular inspection of suction outlets and closure if needed.</p> <p>The visual</p>	

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	<p>3. The responsible persons must be able to demonstrate to the satisfaction of an executive officer that no entrapment or entanglement risk exists in the operation of a pool. ▲</p>		<p>inspection is an important safety measure.</p>	
24.	<p>IV. Written Policies 1) Safety and Supervision Requirements</p> <p>The responsible person must develop and implement a safety and supervision plan which sets out for each pool: ▲</p> <ul style="list-style-type: none"> a. lifesaving equipment, b. telephone access for emergencies, c. a First Aid kit, d. required bather to lifeguard ratios, e. recommended bather safety for special events in any facility which does not provide life guarding, and f. proper storage of pool treatment chemicals in compliance with the 	<p>10.1 ▲ Pool Safety and Supervision Plan</p> <p>A Pool Safety and Supervision Plan shall be developed based on the current best practices developed by the Lifesaving Society of Canada. The plan must include:</p> <ul style="list-style-type: none"> a) a pool admission standard based on the bather's age, swimming competency and adult oversight if the bather is a minor or when there is a question of swimmer competency; b) rules for bather use and supervision of pool mats, inflatable toys and life jackets; c) a list of all of the facility-appropriate lifesaving equipment to be provided on-site; d) a list of the required emergency equipment and procedures including telephone access and emergency telephone numbers; e) a facility safety check procedure; f) supervision protocols including lifeguard scanning and supervision protocols for each public swimming pool when in use, including those not offering lifeguarding; g) Information and procedures for use of a public swimming 	<p>The general statement requiring development, maintenance and implementation of plans is under Section 24 of the Regulation.</p> <p>The plan components have been revised to include the majority of the recommendations from the Jordan Neave Fatality Inquiry.</p> <p>The reference to</p>	<p>The Neave Inquiry recommended mandatory audit for every facility. Industry has already started this as 'best practice' but we will re-evaluate in the next year. RFP participants indicate that an audit at time of opening and external audit every 2 years or when there is a staff change might work. Also, mentioned 'peer auditor' .</p>

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25.	2) Notices for Public Safety	<p>▲ 11. Patron Education and Notification (notices (signage) now under 11.2 below)</p> <p>11.1 Education of Patrons</p> <p>11.1.1 The patron education policy and plan shall include a strategy to provide information to:</p> <p>a) those bathers who should wear protective, water-resistant swimwear including:</p> <ul style="list-style-type: none"> i) children, 35 months and under, and ii) anyone who is or may be incontinent <p>b) those patrons who should consult with a physician prior to using the whirlpool, steam room and sauna, including</p> <ul style="list-style-type: none"> i) pregnant women ii) individuals with medical conditions including but not limited to heart 	<p>The list of notices has been re-arranged.</p> <p>No change to education requirements</p> <p>This was moved from 2) Notices for Public Safety.</p>	

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	<p>1. Each pool must have a sign(s) containing written information and, if possible, visual information, in a size and location that may be easily see by all users which directs or specifies:</p> <ul style="list-style-type: none"> a. Each bather must take a 'cleansing' shower prior to entering the pool' b. No glass is allowed on the pool deck on in other barefoot areas c. Persons on medication for high blood pressure, heart condition, or other medical conditions must to 	<p>disease, hypertension, seizures, diabetes or obesity</p> <ul style="list-style-type: none"> iii) individuals greater than 65 years of age; and iv) individuals with a medical condition requiring the ongoing care of a physician. <p>11.1.2 The plan must address:</p> <ul style="list-style-type: none"> a) the location of signage and notices, the b) the use of different languages, other than English, as well as the use of pictoral information, and c) other education methods <p>11.2 Signs posting rules and safety information</p> <p>An owner or owner's agent, if any, must post one or more signs in a size, type and location that may be easily seen and understood by all patrons which includes the following rules and safety information for the use of the pool.</p> <p>Rules for use of the pool</p> <ul style="list-style-type: none"> 11.2.1 Bathers must take a shower using soap prior to entering the public swimming pool. 11.2.2 Patrons must wash their hands using soap after using the washroom or changing diapers. 11.2.3 Glass is not allowed on the pool deck or in other barefoot areas. 11.2.4 Street shoes must not be worn in wet traffic areas. 11.2.5 Patrons who are intoxicated will not be allowed to use the pool. 11.2.6 The maximum bather load for the public swimming pool. 11.2.7 The public swimming pool depths and identification of those areas of 	<p>New section to clarify how information is shared.</p> <p>This section includes all information that must be provided on the signs, if relevant to the operation.</p> <p>The restriction of</p>	
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	<p>consult with a physician prior to use of the whirlpool or sauna. d. No bather may be intoxicated while using the facility e. The depth and those areas where diving is not allowed. f. The temperature range of the whirlpool, steam room and sauna. g. Bather load and provides an explanation of why bather load is limited, h. No pets are allowed onto the premises, except for seeing eye dogs or other animal used to assist persons with disabilities. i. No street shoes may be worn in wet traffic areas. j. Any other information that the responsible person determines is necessary to maintain the health and safety of the pool facility users.</p>	<p>the public swimming pool where diving is not allowed. 11.2.8 The permitted temperature range of the whirlpool, steam room and sauna. 11.2.9 Location of the fire alarm, telephone or other emergency devices, where applicable. 11.2.10 Where there is no lifeguard on duty, signage stating</p> <ul style="list-style-type: none"> • No lifeguard is on duty, • Children under 13 years of age should be supervised, and • Patrons should not swim alone. <p>11.2.11 Any other information that the owner or owner's agent determines is necessary to maintain the health and safety of the patrons using the pool facility.</p> <p>3) Public Education has been moved to 11.1 Education of patrons (see above)</p>	<p>glass applies to shatterproof thermometers and clocks. The 2014 US Model Aquatic Health Code highlights the importance of handwashing, particularly after diaper changing.</p> <p><i>c. Those persons on medication for high blood pressure etc has been moved to the Education of Patrons section rather than part of the posted rules. An explanation for bather load is no longer required.</i></p> <p>The age has been set to 13 years of age to be consistent with '13 years' allowed for babysitting.</p>	
<p>▲</p>	<p>3) Public Education 1. The responsible person must</p>			

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	<p>develop and implement a plan that is appropriate to the type of pool facility, for the education of bathers on the following:</p> <ul style="list-style-type: none">a) any person with diarrhea or a history of diarrhea over the previous 2 weeks must not use the pool facility,b) Young children, 35 months and under, and anyone who is incontinent must wear protective, water resistant, swimwear in order to minimize the introduction of contaminationc) Time in the whirlpool, sauna and steam rooms is to be limited to 10 minutes. Body temperature rises very quickly and should be monitored to avoid cardiovascular effects. Pregnant women, persons with heart disease, hypertension, seizures diabetes and obesity or those greater than 65 years of age should consult with their physician.	<p>c) was Deleted</p>	<p>2) h. regarding pets has been deleted and is covered in general under section 11.2.11.</p>	
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			<p>c) was considered outside the scope of the regulation and responsibility of the bather in consultation with their physician.</p>	
<p>26.</p>	<p>4) Water Quality Issues 1. The responsible person must develop and implement a response plan which outlines the steps to be taken when: a. Standards for ORP, free chlorine, combined chlorine, cyanuric acid, pH and turbidity are not met, b. Blood, food or chemicals foul the pool, and c. Fecal material or vomitus foul the pool. This plan must adhere to the requirement in Schedule A: 'Fecal Contamination Management for Swimming Pools. 2. The response plan must outline</p>	<p>12.0 Water Quality Incident Response Plan A Water Quality Incident Response Plan that is appropriate to the type of public swimming pool must include the following: a) the steps to be taken when any of the following occur: i) standards for microbiology, ORP, free chlorine, cyanuric acid, pH and clarity in the public swimming pool are not being met, ii) blood, food or chemicals foul the water, or iii) fecal material or vomit foul the water, and b) the name of the appropriate contact person and emergency contact numbers. 12.1 Requirements A Water Quality Incident Response Plan must adhere to the</p>	<p>Revised to include microbiology and reference clarity.</p>	<p>The response plan must include the steps for when the microbiological standards are not met.</p>

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	<p>the persons responsible, emergency contact numbers and the steps required to respond to each scenario.</p>	<p>requirements in Schedule A: "Contamination Management for Public Swimming Pools".</p>	<p>Moved from 4)2. in the Pool Standards 2006 to this section.</p>	
<p>27.</p>	<p>5) General Sanitation Plan</p> <p>The responsible person must develop and implement a plan which outlines a routine schedule for cleaning and adequate disinfection of:</p> <ul style="list-style-type: none"> a. pool decks; b. washrooms and change rooms; c. showers; d. steam rooms and saunas; and e. any other equipment in contact with users of the facility. <p>2. The plan must ensure that soap is provided in washrooms and showers.</p>	<p>13.1 General Sanitation Plan</p> <p>A General Sanitation Plan for a public swimming pool premises must list the chemicals to be used for cleaning and disinfection, and specify a routine schedule for adequate cleaning and disinfecting of:</p> <ul style="list-style-type: none"> a) walls, floors, and decks; b) washrooms and change rooms; c) showers; d) steam rooms and saunas; and e) any other area or equipment in contact with patrons of the pool. <p>Section 2. referring to soap was moved to section 2.6.</p>	<p>Same requirement.</p> <p>Added the reference to a list of chemicals in the first statement. No change to remaining provisions.</p> <p>The requirement for showering is moved to Section 11.2.1. The requirement for soap was moved to Section 2.6.</p>	

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<p>28.</p>	<p>V. Pool Premises</p> <p>1. A shower must be equipped with a thermostatic mixing valve capable of providing water to each shower head with a temperature of 35C to 40C (refer to Section 7.33.29 of the Alberta Building Code)</p> <p>2. Whirlpools must be fitted with temperature regulators.</p> <p>3. A whirlpool must not operate at greater than 40^o C (104^o F) while in use.</p> <p>4. A steam room or sauna must be operated in accordance with manufacturers requirements in order to prevent excessive rise in body temperature when using these facilities.</p> <p>5. The ventilation in all pool facilities must maintain safe air quality. Without limitation, the ventilation in all pool facilities must protect against the buildup of chlorine gas or other disinfection</p>	<p>2.0 Pool Maintenance For the purposes of section 11 of the <i>Regulation</i>, the following pool maintenance standards apply.</p> <p>2.1 Shower water temperature range Every shower must provide water at a temperature of not less than 35 degrees Celsius and not greater than 45 degrees Celsius.</p> <p>2.2 Public swimming pool maximum water temperature 2.2.1 The water in a public swimming pool, when in use, must not be greater than 40 degrees Celsius. 2.2.2 A whirlpool must be fitted with a temperature regulator that is in good working order.</p> <p>2.3 Sauna and steam room maximum temperature 2.3.1 The ambient air temperature in a dry sauna must not be greater than 85 degrees Celsius. 2.3.2 The ambient air temperature in a steam room must not be greater than 60 degrees Celsius. 2.3.3 The ambient air temperature in a sauna or a steam room must be measured and recorded at least once every 24 hours, when in use.</p> <p>2.4 Ventilation The ventilation in a public swimming pool premises must be able to maintain safe air quality and must protect against the buildup of chlorine gas or disinfection by-products.</p> <p>2.5 Wall clocks A wall clock must be</p>	<p>Section was moved to Part 3.0 Operation and Maintenance of Pools.</p> <p>New temperatures have been set for operating saunas and steam rooms to provide clear direction as many manufacturers do not provide guidance.</p> <p>Reference to measuring temperature daily,</p>	
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<p>by-products.</p> <p>6. A clock, must be provided and clearly visible, adjacent to the whirlpool, sauna or steam room to assist bathers in determining the length of stay.</p> <p>7. Any food handling and consumption must occur in a clearly designated area, set aside for that purpose.</p>	<p>a) clearly visible from a whirlpool, sauna or steam room to assist patrons in monitoring their length of stay, and b) maintained in good working order.</p> <p>2.6 Soap in washrooms and showers An adequate supply of soap must be provided in suitable dispensers in all washrooms and showers.</p> <p>2.7 Designated food handling and consumption area Any food handling and consumption must occur in a clearly designated area which is set aside for that purpose.</p>	<p>when in use, is designed to assist operators of hotels/clubs where sauna and steam rooms are not being used daily. When not in use, there is no reason to check the temperature.</p> <p>The words 'adequate' and 'suitable dispenser' were added. Using soap improves the</p> <p>This requirement for soap was</p>	<p>Keun et al in 2011, %70 of contaminatns removed by showering</p>
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			moved from 5) General Sanitation Plan in the <i>Pool Standards 2006</i>													
29.	Schedule A Fecal Contamination Management for Pools	Retained Schedule A Contamination Management for Public Swimming Pools.	The section was revised to improve clarity, remove redundancy and focus on requirements rather than rationale.													
30.	<p>B. Disinfection</p> <p>The current United States Center for Disease Control recommendation for responding to liquid stool is a Ct* of 9600 where C is the disinfectant concentration (in mg/l) and t is the time (in min.) This Ct will inactivate 99.9% (3 log removal) of <i>Cryptosporidium</i> oocysts in the pool. (MMWR May 25, 2001) This recommendation is based on the use of chlorine as the disinfectant and a long exposure period. Pathogens have varying sensitivity to chlorine and the Ct provides a quantitative number to indicate that sensitivity.</p> <p>Some jurisdictions have</p>	<p>The above table is based on a minimum Ct of 15,300*, maximum pH of 7.5, minimum temperature of 25 degrees Celsius and 99.9% inactivation of <i>Cryptosporidium</i> cysts taken from Shields, JM et al (2008) Inactivation of <i>Cryptosporidium parvum</i> under chlorinated recreational water conditions, published by <i>Journal of Water and Health</i>. 06.4:513-520.</p> <table border="1"> <thead> <tr> <th>Chlorine Concentration (ppm)</th> <th>Disinfection Time</th> <th>Equivalent Ct</th> </tr> </thead> <tbody> <tr> <td>1.0</td> <td>15,300 minutes (255 hours)</td> <td>15,300</td> </tr> <tr> <td>10.0</td> <td>1,530 minutes (25.5 hours)</td> <td>15,300</td> </tr> <tr> <td>20.0</td> <td>765 minutes (12.75 hours)</td> <td>15,300</td> </tr> </tbody> </table>	Chlorine Concentration (ppm)	Disinfection Time	Equivalent Ct	1.0	15,300 minutes (255 hours)	15,300	10.0	1,530 minutes (25.5 hours)	15,300	20.0	765 minutes (12.75 hours)	15,300	<p>The CT response for liquid stool was revised to 15,300 as recommended by the CDC.</p> <p>The section was edited to remove the background information which is not considered regulatory and to ensure that the values were consistent.</p>	<p>Only the CT values for crypto have been revised – there is no change for giardia.</p> <p>There was discussion that a minimum of 20 ppm should be required as there is some concern that lower levels for longer time periods are not effective. However CDC does not set a minimum.</p>
Chlorine Concentration (ppm)	Disinfection Time	Equivalent Ct														
1.0	15,300 minutes (255 hours)	15,300														
10.0	1,530 minutes (25.5 hours)	15,300														
20.0	765 minutes (12.75 hours)	15,300														

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	suggested that a lower Ct value may be adequate but must be accompanied with other processes to minimize the infectious dose. In Britain, flocculation and coagulation, accompanied by filtration and six pool turnovers is required to achieve a 5 log removal. (Croll, 2002).			In instances where an outbreak has occurred, AHS may require the minimum 20 ppm to ensure that the crypto is adequately inactivated.
31.	New	<p>Public Swimming Pool Water Contamination Response</p> <p>2. c) In water that contains chlorine stabilizer such as cyanuric acid, the pH shall be lowered to 6.5 and the free chlorine residual shall be raised to 40 mg/L and maintained for at least 30 hours or an equivalent CT value.</p>	<p>This requirement has been added to align with the recommendations from CDC. Cyanuric acid greatly reduces the efficacy of chlorine. CDC continues to work on this issue and this requirement will be considered in light of new work in this area.</p>	<p>The schedule now references the CDC <i>Recommendations for Aquatics Operators of Treated Venues 2012</i></p> <p>CT for formed fecal was modified so that the CT was 50 for each combination of time and concentration. . ie 45 was changed to 50 minutes. The Model Aquatic Health Code now also recommends</p>

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				<p>doubling the CT for formed stool but was too late to be considered for this edition. Formed stool is primarily associated with giardia which is less resistant to chlorine. This will be revisited in next review.</p>
	<p>Schedule A B. Disinfection b) Disinfection with Supplemental Technology Supplemental technologies such as ultraviolet disinfection(UV), ozone and chlorine dioxide, when properly applied, can effectively inactivate protozoa such as <i>Cryptosporidium</i>. Many of the new disinfectant processes have been used in drinking water treatment and their application to pool are not well understood. Should a facility use a combination of chlorine and supplemental technology, the number of turnovers required will be determined by the regional health authority in order to achieve</p>	<p>3. The owner or owner's agent, if any, of a public swimming pool may use a combination of chlorine and other supplemental disinfection treatments to respond to a contamination event. Pursuant to section 8(1) of the <i>Regulation</i>, the regional health authority must review and approve any supplemental disinfection prior to its use in order to ensure that an equivalent CT value will be achieved.</p>	<p>Clarifies the approval of supplemental disinfection and a focus on log reduction or CT.</p>	

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	an equivalent CT of 9600.			
32.	<p>Reference Materials</p> <p>A. Approval Process for Ultraviolet (UV) Treatment</p> <p>The following protocol provides a reference for regional health authorities regarding the application of ultraviolet technology in response to fecal contamination and the steps required to evaluate and approve its use in a pool. (EPCOR, County of Strathcona, 2002)</p>	Deleted	The review of supplemental technology is considered the responsibility of Alberta Health Services. This section is also outdated.	
33.	<p>B. Inactivation of Viruses, <i>Giardia</i> and <i>Cryptosporidium</i></p> <p>Dr. Norman Neumann, Provincial Laboratory for Public Health Dr. Steve Craik, Assistant Professor, Department of Civil and Environmental Engineering, University of Alberta January 2003</p>	Deleted	This section is for information only and is not considered regulatory.	
34.	<p>C. Equivalent Ct Values for Chlorination at 25°C*</p>	Deleted	This section was for information purposes and was not considered regulatory.	
35.	<p>D. Bibliography</p>	Deleted	For information purposes only and not considered	

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36.	New	<p>Schedule B Calculation for the Maximum Bather Load Maximum bather load is the maximum number of bathers in any 24 hour period based on the capacity of the filtration system. It can be determined based on the required two cubic meters of treated water set by the 1995 <i>Alberta Building Code</i> for every bather in each 24 hour period, and the turnover rate.</p>	<p>regulatory. This new section assists both the operator and the health inspector in establishing a bather load when the original bather design information is not available.</p>															
37.	New	<p>Schedule C Calculation of Velocity Through Suction Outlets For purposes of Section 9.2 in the <i>Pool Standards</i>, the velocity through the suction outlets (drain covers) may be calculated based on the flow and the open area of a cover as outlined below.</p> <table border="1" data-bbox="728 935 1706 1105"> <thead> <tr> <th></th> <th>2 outlets in total</th> <th>3 outlets in total</th> <th>4 outlets in total</th> <th>5 outlets in total</th> <th>6 outlets in total</th> <th>>6 outlets in total</th> </tr> </thead> <tbody> <tr> <td>Percent of flow through each unblocked outlet.</td> <td>100%</td> <td>50%</td> <td>33%</td> <td>25%</td> <td>20%</td> <td>100% / (# of open suction outlets)</td> </tr> </tbody> </table> <p>CPSC Interpretation at http://www.poolsafely.gov/faqs/#31</p>		2 outlets in total	3 outlets in total	4 outlets in total	5 outlets in total	6 outlets in total	>6 outlets in total	Percent of flow through each unblocked outlet.	100%	50%	33%	25%	20%	100% / (# of open suction outlets)	<p>This new section provides a calculation to determine the flow across the suction outlet and determine compliance with Section 9.3.2. Options for more than 1 suction outlet have been included.</p>	<p>Ray Cronise: TDH is an easy way to independently verify flow rate. If you install a flow meter, measure TDH (5 mins max) then look up the flow on the pump curve, and be reasonably assured that it is correct. The best option is never use the drain when bathers are in the pool. It diminishes circulation and is</p>
	2 outlets in total	3 outlets in total	4 outlets in total	5 outlets in total	6 outlets in total	>6 outlets in total												
Percent of flow through each unblocked outlet.	100%	50%	33%	25%	20%	100% / (# of open suction outlets)												

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				completely unnecessary. There's no perfect safety beyond removing the hazard.
	Materials Needed	APSP checklist on flow provides multiple ways to calculate the flow rate.		

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Questions on Anti-Entrapment:

1. How will AHS validate the anti-entrapment provisions?
2. What should the operator do if covers do not fit (what not to do)
3. How to address the sump depth – does the 1.5X the diameter of the pipe only apply when the manufacturer indicates that the clearance is needed?
4. How can AHS and operator assess 'hydraulically balanced"

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